

Claims:

1. A device for converting a header of a packet to forward the packet to an appropriate one of output ports of a switch fabric, comprising:

redundant incoming line systems;

5 a header conversion table storing a set of header conversion information for one of the redundant incoming line systems; and

a header converter for converting a header of a packet received from each of the redundant incoming line systems
10 by referring the set of header conversion information.

2. A device for converting a header of a packet to forward the packet to an appropriate one of output ports of a switch fabric, comprising:

at least one line interface;

15 a reserved line interface corresponding to each of said at least one line interface;

a selector for normally selecting a corresponding line interface to receive a packet stream and, when a failure occurs on a system corresponding to the corresponding line
20 interface, selecting the reserved line interface to receive the packet stream;

a header conversion table storing header conversion information for each of said at least one line interface; and
a header converter for converting the header of a packet received from the reserved line interface selected by the
5 selector by referring to the header conversion information for the corresponding line interface.

3. The device according to claim 2, wherein said at least one line interface and the reserved line interface have line numbers uniquely assigned thereto, wherein a line number
10 of each of said at least one line interface and the reserved line interface is transferred to the header converter,

wherein the header converter comprises:

a line number converter for converting a line number
of the reserved line interface to a line number of the
15 corresponding line interface; and

a controller for accessing the header conversion information for the corresponding line interface by using the line number of the corresponding line interface.

4. The device according to claim 3, wherein, when the
20 reserved line interface is selected by the selector due to occurrence of the failure, the line number converter converts the line number of the reserved line interface to the line number of the corresponding line interface.

5. The device according to claim 2, wherein the selector is a multiplexer for multiplexing selected outputs of said at least one line interface and the reserved line interface to produce a sequence of packets, which is transferred to the
5 header converter.

6. The device according to claim 5, wherein the multiplexer transfers a line number of each of said at least one line interface and the reserved line interface to the header converter.

10 7. A device for converting a header of a packet to forward the packet to an appropriate one of output ports of a switch fabric, comprising:

a plurality of line interfaces connected to respective ones of incoming lines;

15 a reserved line interface;

a first selector for connecting a selected one of the incoming lines to the reserved line interface when a failure occurs on a system corresponding to a corresponding line interface;

20 a second selector for normally selecting each of the plurality of line interfaces and, when the failure occurs on the system corresponding to the corresponding line interface,

selecting the reserved line interface in place of the corresponding line interface;

a header conversion table storing header conversion information for each of the plurality of line interfaces; and

5 a header converter for converting the header of a packet received from the reserved line interface selected by the second selector by referring to the header conversion information for the corresponding line interface.

8. The device according to claim 7, wherein the 10 plurality of line interfaces and the reserved line interface have line numbers uniquely assigned thereto, wherein a line number of each of the plurality of line interfaces and the reserved line interface is transferred to the header converter,

wherein the header converter comprises:

15 a line number converter for converting a line number of the reserved line interface to a line number of the corresponding line interface; and

a controller for accessing the header conversion information for the corresponding line interface by using the 20 line number of the corresponding line interface.

9. The device according to claim 8, wherein, when the reserved line interface is selected by the second selector due to occurrence of the failure, the line number converter converts

the line number of the reserved line interface to the line number of the corresponding line interface.

10. The device according to claim 7, wherein the second selector is a multiplexer for multiplexing selected outputs of 5 the plurality of line interfaces and the reserved line interface to produce a sequence of packets, which is transferred to the header converter.

11. The device according to claim 10, wherein the multiplexer transfers a line number of each of the plurality of 10 line interfaces and the reserved line interface to the header converter.

12. The device according to claim 2, wherein the switch fabric is an ATM (asynchronous transfer mode) switching device and the packet is an ATM cell.

15 13. The device according to claim 7, wherein the switch fabric is an ATM (asynchronous transfer mode) switching device and the packet is an ATM cell.

14. A method for converting a header of a packet to forward the packet to an appropriate one of output ports of a 20 switch fabric in an ATM (asynchronous transfer mode) switching

device having redundant incoming line systems, comprising the steps of:

storing a set of header conversion information for one of the redundant incoming line systems; and

5 converting a header of a packet received from each of the redundant incoming line systems by referring the set of header conversion information.

15. A method for converting a header of a packet to forward the packet to an appropriate one of output ports of a 10 switch fabric in an ATM (asynchronous transfer mode) switching device having at least one line interface and a reserved line interface corresponding to each of said at least one line interface, comprising the steps of:

a) normally selecting a corresponding line 15 interface to receive a packet stream;

b) when a failure occurs on a system corresponding to the corresponding line interface, selecting the reserved line interface to receive the packet stream;

c) storing header conversion information for each 20 of said at least one line interface; and

d) converting the header of a packet received from the reserved line interface by referring to the header conversion information for the corresponding line interface.

16. The method according to claim 15, wherein said at least one line interface and the reserved line interface have line numbers uniquely assigned thereto, wherein the step (d) comprises the steps of:

5 receiving a line number of each of said at least one line interface and the reserved line interface;

converting a line number of the reserved line interface to a line number of the corresponding line interface;
and

10 accessing the header conversion information for the corresponding line interface by using the line number of the corresponding line interface.

17. A method for converting a header of a packet to forward the packet to an appropriate one of output ports of a switch fabric in an ATM (asynchronous transfer mode) switching device having a plurality of line interfaces connected to respective ones of incoming lines and a reserved line interface, comprising the steps of:

20 connecting a selected one of the incoming lines to the reserved line interface when a failure occurs on a system corresponding to a corresponding line interface;

normally selecting each of the plurality of line interfaces;

when the failure occurs on the system corresponding

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to the corresponding line interface, selecting the reserved line interface in place of the corresponding line interface;

storing header conversion information for each of the plurality of line interfaces; and

5 converting the header of a packet received from the reserved line interface by referring to the header conversion information for the corresponding line interface.